

5114 (F). DURANGO: Metates, north of Cueva, Aug. 29–30, 1934, *Pennell 18410* (US).

(To be Continued)

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WALKER PRIZE IN ECONOMIC BOTANY.—Original unpublished essays on any subject in the field of plants useful to man are eligible for the Walker Prize competition for 1941. Further information may be had from the Secretary, New England Museum of Natural History, 234 Berkeley Street, Boston, Massachusetts. The closing date is May 1, 1941.

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## THE RED AZALEA OF THE CUMBERLANDS

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FOR a number of years the writer has been referring to an Azalea of the Cumberland Mountains and Cumberland Plateau under the name "red azalea,"<sup>1</sup> for want of something more specific. W. H. Camp also mentions "red azalea."<sup>2</sup> In Small's flora, the statement is made that "a red azalea native in the Cumberland Mountains . . . may be distinct."<sup>3</sup> To refer this plant to *Rhododendron calendulaceum* is to ignore its outstanding differences from that species. The red azalea of the Cumberlands is sufficiently different from *R. calendulaceum* as to be readily distinguished at any season. It also differs in habitat and in time of bloom from that species. *R. calendulaceum* in southeastern Kentucky blooms at the beginning of May. The natives there call it "honeysuckle" or "yellow honeysuckle." When the writer first saw bushes of the red azalea, in August, 1931, on the summit of Black Mountain in Harlan County, Ky., and inquired of a mountaineer as to the color and time of bloom, the reply was that the flowers are red and bloom in summer, about the first of July. They are not there confused with the "yellow honeysuckle." The height of the bloom-period is the end of June,

<sup>1</sup> Braun, E. Lucy, Vegetation of Pine Mountain, Kentucky. *Amer. Midland Nat.* **16**: 517–565. 1935. An ecological transect of Black Mountain, Kentucky. *Ecol. Mon.* **10**: 193–241. 1940.

<sup>2</sup> The red azalea of Black Mountain, Kentucky. *Jour. N. Y. Bot. Garden* **37**: 164–165. 1936.

<sup>3</sup> Small, J. K. *Manual of the southeastern flora*, p. 994. N. Y. 1933.



though in early seasons, bushes at lower elevations may bloom the middle of June. There is, then, an interval of five weeks to two months between the bloom-periods of these two azaleas.

The hesitancy in assigning specific rank to the red azalea has been due to its resemblance to the flame azaleas of the southern Blue Ridge and Great Smoky Mountains. The great range in time of bloom and in relative maturity of leaves at blossom-time which is displayed by flame azaleas of the southern Blue Ridge province, especially the Great Smoky Mountains, where there is a succession of bloom from May to July, suggest that all are referable to one species, or perhaps are hybrids. This last possibility is mentioned by Camp.<sup>4</sup>

In a region where the bloom-periods do *not* overlap, hybrids are impossible, and specific stability is maintained. In southeastern Kentucky (in Letcher County) both *R. calendulaceum* and red azalea occur. Specimens of the former were collected in full bloom on May 6, 1934, at an elevation of about 2700 ft. in Joe Day Branch, Black Mountain. The flowers open when the leaves are unfolding and when some are about half-grown, but before the leafy shoots of the season have elongated. On the same day, and at approximately the same elevation, specimens of red azalea were collected. The buds which produce the flower-clusters are still in winter condition. The winter buds which produce leafy shoots are just beginning to open. On June 21, 1933, (a very early season) specimens of the two azaleas were collected on Pine Mountain, Letcher County, Ky., at about 2000 ft. elevation. At that time, the capsules of *R. calendulaceum* were about half-grown, some 2 cm. long; the flowers of red azalea were just beginning to fade. These differences at the same date and elevation are mentioned in order to emphasize the improbability of hybridization in this region, hence the maintenance of specific distinctness of the two azaleas. In a region where only one of these azaleas occurs, a pure strain should persist.

At the western edge of the Cumberland Plateau in southern Kentucky, the red azalea occurs, but not the better known flame azalea. This is a region of isolated occurrences of ancient species, some coastal plain, some southern Appalachian.<sup>5</sup> The red azalea

<sup>4</sup> Camp, W. H. On Appalachian trails. Jour. N. Y. Bot. Garden, 37: 249-265. 1936.

<sup>5</sup> Braun, E. Lucy. Some relationships of the flora of the Cumberland Plateau and Cum-



of this section may well represent an ancient species which here has remained distinct; hence a specimen from this area is designated as the type of *Rhododendron cumberlandense* to be described here. In the southern Blue Ridge province it has hybridized freely resulting in the apparently variable flame azalea of that section. A genetical study might help to establish the specific identity of the red azalea and the hybrid nature of the flame azalea of the southern Blue Ridge. *Rhododendron calendulaceum* of southeastern Kentucky and the red azalea of Kentucky both differ from flame azaleas collected on Standing Indian Mountain in the Nantahala National Forest of North Carolina on June 26, 1940. The flame azalea of the Nantahala region has characters of both of the Kentucky azaleas under consideration, and resembles the red azalea in the habit of flowering when the leaves are about mature.

In 1937, W. P. Lemmon described as *Azalea Bakeri* a yellow-to red-flowered species from northern Georgia.<sup>6</sup> The red azalea of the Cumberlands and Lemmon's species have some features in common, suggesting that perhaps *A. Bakeri* is by hybridization related to the red azalea (here designated as *R. cumberlandense*). It appears to be a much larger-flowered species.

**RHODODENDRON cumberlandense**, sp. nov. Shrub with twigs sparsely strigose, winter buds yellow-brown, scales ciliate, mucronate, the outer scales aristate. Leaves obovate, 3–5 cm. long, glabrous except on midrib above and midrib and lateral veins below, margin ciliate. Flowers opening 5–6 weeks after leaves, mostly red; corolla 3.5–4 (rarely 5) cm. broad; upper lobe broad, with large orange blotch. Filaments carmine, nearly glabrous. Capsule 2 cm. long, strigose.<sup>7</sup>—Cumberland Plateau and Cumberland Mountains, Kentucky, in mesophytic oak woods. Type (in writer's herbarium) and isotype (in herbarium of Arnold Arboretum), Yahoo ridge, McCreary Co., Ky., June 15, 1935 (*Braun*,

berland Mountains in Kentucky. *Rhodora* 39: 193–208. 1937. A remarkable colony of coastal plain plants on the Cumberland Plateau in Laurel County, Kentucky. *Am. Midland Nat.* 18: 363–366. 1937.

<sup>6</sup> Lemmon, W. P. Notes on a study of the southeastern azaleas with descriptions of two new species. *Bartonia*, no. 19: 14–17. 1937.

<sup>7</sup> **RHODODENDRON cumberlandense**, sp. nov., frutex, ramulis sparse strigosis, gemmis flavo-brunneis, paleis ciliatis mucronatis, exterioribus aristatis; foliis obovatis 3–5 cm. longis, costa supra costa venulisque lateralibus infra exceptis glabris, margine ciliatis; floribus 35–40 diebus post maturitate foliorum dehiscens; corollis 3.5–4 (rarius –5) cm. latis, lobo superiore lato, macula magna aurantiaca ornato; filamentis rubris fere glabris; capsulis 2 cm. longis. Typus (in herb. scriptoris) ad Yahoo Ridge, Comitatus McCreary, Kentucky, June 15, 1935, collectus, *Braun* 971.



no. 971). Specimens in writer's herbarium from Flat Rock, McCreary Co.; 10 miles east of London, Laurel Co.; Peabody, Clay Co.; Stony Fork of Leatherwood, Perry Co.; Buck Branch, Whitley Co.; Pine Mountain, Letcher Co.; Black Mountain, Letcher Co. Most abundant on the summit of Black Mountain in Letcher and Harlan counties; also on Log Mountain in Bell Co.

A tabular comparison of the characters of *R. calendulaceum* (the early spring blooming plant of the Cumberland Mts., not the apparent hybrids of the southern Blue Ridge) and of *R. cumberlandense* will emphasize the characters of the latter species.

*R. calendulaceum*

A shrub of dry southerly slopes, growing in company with other heaths.

Loosely branched, straggly; leaves more or less evenly disposed along the twigs of the season.

Young twigs and petioles strigose, with dense fine pubescence between the coarse hairs.

Young winter buds (June) yellow, scales ciliate, the outer scales pubescent, mucronate.

Leaves bright green, 5-7 cm. long, 2.5-3 cm. wide, broadest in the middle or sometimes above, sparsely strigose above and below, densely so near the leaf margins and on veins beneath; midrib beneath with dense fine pubescence between the coarse hairs.

Flowers opening with the leaves.

Corolla 5 cm. or more across, yellow to orange; the upper corolla-lobe broader than the lateral.

*R. cumberlandense*

A shrub of more mesophytic (usually oak) woods, often the only heath.

More compactly branched; leaves more crowded toward tips of twigs.

Young twigs sparsely strigose, otherwise glabrous or nearly so.

Young winter buds (June) yellow-brown, glabrous, scales ciliate, mucronate, the outer aristate, outermost with awn as long as body of scale.

Leaves dark green, mostly 3-5 cm. long, occasionally 7 cm., 1.5-2 or sometimes 2.5 cm. wide, broadest above the middle; glabrous above except for short fine whitish pubescence along the midrib, glabrous below except on midrib and larger lateral veins which are finely pubescent and sparsely strigose; margins ciliate, but without the strigose band near margin.

Flowers opening 5-6 weeks after the leaves, i.e., when leaves are about mature.

Corolla 3.5-4 cm. or sometimes 5 cm. across, prevailing red, but ranging through all the nasturtium colors; the upper corolla-lobe broader than laterals, sometimes 2X, almost orbicular but contracted to a short acuminate tip, with an orange-yellow blotch occupying most of the area.



*R. calendulaceum*

Corolla-tube loosely and coarsely glandular-pubescent, scattered glandular hairs continuing in a band almost to the apex of corolla-lobes in the midrib region.

Style and filaments orange shading to yellow about half-way to tip.

Filaments conspicuously pubescent for 1–2 cm. beyond throat of corolla tube.

Calyx-lobes short-ovate, sparsely hirsute, ciliate.

Capsules narrowly elongate, 2.5 cm. long, strigose, with pedicels glandular-pubescent.

*R. cumberlandense*

Corolla-tube pubescent with short glandular and non-glandular hairs, the glands, almost sessile, continuing in a band almost to apex of corolla lobes.

Style and filaments carmine.

Filaments glabrous or sparsely pubescent for about 1 cm. beyond throat of corolla tube.

Calyx-lobes similar.

Capsules broader and shorter, 2 cm. long, strigose, with pedicels strigose.

The smaller and more brilliantly colored flowers, the summer blooming even at low elevations (1200–1300 ft. at the western edge of the Cumberland Plateau), the small, nearly glabrous leaves, and brown, glabrous winter-buds with awned scales will generally distinguish this azalea from *R. calendulaceum*.

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GERANIUM NEMORALE Suksd., var. **Bicknellii** (Britton), comb. nov. *G. Bicknellii* Britton in Bull. Torr. Bot. Cl. xxiv. 92 (1897).

When I published a study of *Geranium carolinianum* and *Allies* in northeastern North America, in RHODORA, xxxvii. 295–301 (1935), I was guilty of a lapse, due to long familiarity with the name *G. Bicknellii*. I there showed that there are no specific distinctions but good varietal characters separating the more eastern plant (*G. Bicknellii*) from the more western *G. Bicknellii*, var. *longipes* (Wats.) Fern. in RHODORA, l. c. 297 (1935). Under var. *longipes* I included as a synonym *G. nemorale* Suksd. in Deuts. Bot. Monats. xvi. 222 (1892), being then quite blind to the fact that Suksdorf's binomial antedated that of Britton by five years! My attention was most kindly directed to this error a year ago by Mr. S. J. Smith, who suggested that I make